

What is claimed is:

1. A method for dynamically modulating driving current applied to a backlight module, comprising the steps of:

calculating the brightness distribution of a pixel on a frame;

5 determining the value of the driving current of the backlight module according to the calculated brightness distribution; and

applying the determined driving current to the backlight module during at least one vertical scanning period.

10 2. The method for dynamically modulating driving current applied to a backlight module of Claim 1, wherein if the brightness distribution is concentrated in high brightness, the value of the driving current is increased so as to raise the luminous intensity of the backlight module.

15 3. The method for dynamically modulating driving current applied to a backlight module of Claim 1, wherein if the brightness distribution is concentrated in low brightness, the value of the driving current is decreased so as to reduce the luminous intensity of the backlight module.

20 4. The method for dynamically modulating driving current applied to a backlight module of Claim 1, wherein the driving current of the backlight module begins to be modulated every one to sixty vertical scanning periods.

25 5. The method for dynamically modulating driving current applied to a backlight module of Claim 1, wherein the brightness distribution is calculated according to the percentage of the high brightness pixels, and the driving current is adjusted in terms of the percentage.

6. The method for dynamically modulating driving current applied to a backlight module of Claim 5, wherein the percentage of the

high brightness pixels is in a range of 5% to 25%.

7. The method for dynamically modulating driving current applied to a backlight module of Claim 1, wherein the calculation of the brightness distribution further comprising the steps of:

5 designating various gradation ranges to represent corresponding brightness of red, green and blue sub pixels on the frame;

counting the amount of the sub pixels pertaining to each of the gradation ranges to have brightness range indices; and

10 calculating a bright distribution index for the frame according to the brightness range indices.

8. The method for dynamically modulating driving current applied to a backlight module of Claim 7, wherein the brightness range indices can be expressed as a function of the amount of the sub pixels pertaining to each of the gradation ranges with a polynomial of multi-
15 powers terms, trigonometric function terms or logarithmic function terms, and the function is dependent on requirements of the backlight module.

9. The method for dynamically modulating driving current applied to a backlight module of Claim 7, wherein the brightness distribution index can be expressed as a function of the brightness range
20 indices with a polynomial of multi-powers terms, trigonometric function terms or logarithmic function terms, and the function is dependent on the characteristics or requirements of the backlight module.

10. The method for dynamically modulating driving current applied to a backlight module of Claim 7, wherein the driving current of the
25 backlight module is determined by the steps of:

defining maximum and minimum values of the driving current and a plurality of intermediate values between the maximum and minimum values; and

designating the value of each driving current sequentially in

accordance with the brightness distribution index .

11. The method for dynamically modulating driving current applied to a backlight module of Claim 7, wherein maximum and minimum values appearing on the driving current are dependent on the characteristics or requirements of the backlight module.

12. The method for dynamically modulating driving current applied to a backlight module of Claim 7, wherein further comprising a plurality of weighted numbers in accordance with the gradation ranges and the brightness distribution index is expressed as an equation of the brightness ranges indices multiplied by the corresponding weighted numbers.

13. The method for dynamically modulating driving current applied to a backlight module of Claim 12, wherein the weighted numbers are not smaller than zero.

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